



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,899	07/12/2001	Paul Wolejko	SAA-0055	2016

23569 7590 11/03/2003

SQUARE D COMPANY
INTELLECTUAL PROPERTY DEPARTMENT
1415 SOUTH ROSELLE ROAD
PALATINE, IL 60067

EXAMINER

PEREZ DAPLE, AARON C

ART UNIT	PAPER NUMBER
----------	--------------

2121

DATE MAILED: 11/03/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/903,899

Applicant(s)

WOLEJKO ET AL.

Examiner

Aaron C Perez-Daple

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 August 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2, 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to application filed 7/12/01 which has been fully considered.
2. Claims 1-38 are presented for examination.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The examiner suggests "A Modular Control System with Reflex Response Circuit."

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claim 1** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, line 2 recites the limitation "connected to a condition." The input module cannot be connected to a condition, but rather is "responsive to a condition having a signal representative thereof," as the applicant recites more clearly in lines 4 and 5 of claim 9.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2121

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1, 2, 4, 6, 8-12, 14, 16, 17, 19, 20, 22-24, 2-31, 34, 35 and 37** are rejected under 35 U.S.C. 102(b) as being anticipated by Dummermuth (US 6,073,053) (hereinafter Dummermuth).

8. As for claims 1 and 9, Dummermuth discloses a reflexive control system having a communication conduit [communication network 14 and device connections as shown in Figs. 1 and 2], the reflexive control system comprising:

an input module [As disclosed by applicant in the second paragraph of page 1 of the specification, input modules include sensors such as optical sensor 26, Fig. 1, which would be operably connected to the communication conduit via terminals 66, Fig. 2.] operably connected to the communication conduit, the input module being responsive to a condition having a signal representative thereof, wherein the input module transmits the representative signal onto the communication conduit [col. 3, lines 27-48, “An example industrial...the actuator assembly 30.”]; and,

an output module [I/O card 18, Fig. 2] operably connected to the communication conduit, the output module having a reflex function to convert the representative signal into a state signal [output signal is inherently a state signal] wherein the output module transmits the state signal onto the communication conduit [col. 3, lines 7-14, “Fig. 3 is a...on one I/O card.”].

Art Unit: 2121

9. As for claim 2, Dummermuth discloses the control system of claim 1 further including a means for configuring the reflex function [col. 2, lines 29-38, "The logic circuit... the central processor."; col. 4, lines 16-19, "The processor module...in the art."].
10. As for claim 4, Dummermuth discloses the control system of claim 1 wherein the communication conduit is a bus [Fig. 2].
11. As for claim 6, Dummermuth discloses the control system of claim 1 wherein the communication conduit is a network [communication network 14, Fig. 2].
12. As for claim 8, Dummermuth discloses the control system of claim 1 further including a master scanner, the master scanner being operably connected to the communication conduit [central processor 12, Fig. 2].
13. As for claim 10, Dummermuth teaches the reflexive control system of claim 9 wherein the input module transmits the representative signal onto the communication conduit in response to a change in the representative signal [col. 3, lines 27-48, "An example industrial...actuator assembly 30."].
14. As for claim 11, Dummermuth teaches the reflexive control system of claim 9 further including a master scanner, the master scanner monitors the output of the output module [central processor 12, Fig. 2; col. 3, line 65 – col. 4, line 7, "The I/O image table...arrows 58 and 60."].
15. As for claim 12, Dummermuth teaches the reflexive control system of claim 11 wherein the master scanner is a programmable logic controller [central processor 12, Fig. 2].
16. As for claim 14, Dummermuth teaches the reflexive control system of claim 9 further comprising a means for configuring the reflex function of the output module for integration

Art Unit: 2121

with the control system [col. 2, lines 29-38, "The logic circuit...the central processor."; col. 4, lines 16-19, "The processor module...in the art."].

17. As for claim 16, Dummermuth teaches the reflexive control system of claim 14 further including a master scanner, the master scanner monitors the output of the output module [central processor 12, Fig. 2; col. 3, line 65 – col. 4, line 7, "The I/O image table...arrows 58 and 60."].
18. As for claim 17, Dummermuth teaches the reflexive control system of claim 16 wherein the master scanner is a programmable logic controller [central processor 12, Fig. 2].
19. As for claim 19, Dummermuth teaches the reflexive control system of claim 16 wherein the master scanner comprises the means for configuring the reflex function of the output module [col. 2, lines 29-38, "The logic circuit...the central processor."; col. 4, lines 16-19, "The processor module...in the art."].
20. As for claim 20, Dummermuth teaches the reflexive control system of claim 19 wherein the master scanner is a programmable logic controller [central processor 12, Fig. 2].
21. As for claim 22, Dummermuth teaches the reflexive control system of claim 9 wherein the reflex function comprises firmware in the output module [col. 4, lines 39-49, "The output of AND...will be described."].
22. As for claim 23, Dummermuth teaches the reflexive control system of claim 9 further comprising an object dictionary wherein the reflex function is specified in the object dictionary [memory 52 and 54, Fig. 2; col. 3, line 65 – col. 4, line 7, "The I/O image table...arrows 58 and 60."].

Art Unit: 2121

23. As for claim 24, Dummermuth teaches the reflexive control system of claim 23 further including a master scanner for monitoring the output of the output module, the object dictionary is embedded within the master scanner [central processor 12, Fig. 2; col. 3, line 65 – col. 4, line 7, “The I/O image table...arrows 58 and 60.”].
24. As for claim 27, Dummermuth discloses a method of controlling a communication system having an input module [As disclosed by applicant in the second paragraph of page 1 of the specification, input modules include sensors such as optical sensor 26, Fig. 1, which would be operably connected to the communication conduit via terminals 66, Fig. 2.] and an output module [I/O card 18, Fig. 2], both modules being operably connected to a communication conduit [communication network 14 and device connections as shown in Figs. 1 and 2], the method comprising the steps of:
- sensing a condition, the condition having a signal representative thereof [col. 3, lines 27-48, “An example industrial...the actuator assembly 30.”];
 - transmitting the representative signal onto the communication conduit in response to a change in the condition [signal 28, Fig. 1];
 - receiving the representative signal [received by terminals 66, col. 4, lines 25-38, “Referring now to Fig. 3...will be asserted.”];
 - converting the representative signal to a state signal [conversion process is performed by the reflex function; col. 1, line 59 – col. 2, line 5, “The present inventor...local specialized hardware.”]; and,
 - transmitting the state signal onto the communication conduit [col. 3, lines 7-14, “Fig. 3 is a...on one I/O card.”].

Art Unit: 2121

25. As for claim 28, Dummermuth discloses the method of claim 27 further including the step of storing the state signal [col. 4, lines 13-16, "Similarly but not shown...in the I/O image table."].
26. As for claim 29, Dummermuth discloses the method of claim 28 further including the step of monitoring the signal communication of the control system [col. 3, line 65 – col. 4, line 7, "The I/O image table...arrows 58 and 60."].
27. As for claim 30, Dummermuth discloses the method of claim 29 further including the step of storing the state signal on a master scanner [col. 4, lines 13-16, "Similarly but not shown...in the I/O image table."].
28. As for claim 31, Dummermuth discloses the method of claim 30 further including the step of initializing the control system [inherent].
29. As for claim 34, Dummermuth discloses the method of claim 27 wherein a reflex function within an output converts the representative signal to the state signal [output signal is inherently a state signal; col. 4, lines 7-14, "Fig. 3 is a...on one I/O card."].
30. As for claim 35, Dummermuth discloses the method of claim 27 wherein the communication conduit is a bus [Fig. 2].
31. As for claim 37, Dummermuth discloses the method of claim 27 wherein the communication conduit is a network [Fig. 2].

Claim Rejections - 35 USC § 103

32. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2121

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

33. **Claims 3 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Dummermuth (US 6,073,053) (hereinafter Dummermuth). As for claims 3 and 15

Dummermuth teaches configuring the reflex function with a central processor [col. 2, lines 29-38, "The logic circuit...the central processor."; col. 4, lines 16-19, "The processor module...in the art."]. Dummermuth does not specifically disclose that a PC may comprise the central processor [12, Fig. 2]. Official Notice is given that it is both known and expected in the art to use a PC as a central processor in a control system. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth by using a PC as the central processor because a PC provides an affordable platform and user interface with sufficient processing power for most control systems.

34. **Claims 5, 7, 13, 18, 21, 26, 32, 33, 36, and 38** are rejected under 35 U.S.C. 103(a) as being obvious over Dummermuth (US 6,073,053) (hereinafter Dummermuth) in view of Edwards et al (US 5,938,754) (hereinafter Edwards).

35. As for claims 5, 7 21, 26, 36 and 38, Dummermuth does not specifically teach the use of CANopen protocol. Edwards teaches the use of CANopen protocol in industrial manufacturing applications [col. 2, lines 23-38, "Comparison of automotive...Honeywell Microswitch."]. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth by using CANopen protocol over either a network or a bus because this would provide an easily configurable system and allow for detection and

correction of transmission errors caused by electromagnetic interference, as taught by Edwards [col. 2, lines 17-22, "The CAN protocol...centralized diagnostics."]

36. As for claims 13 and 18, Dummermuth does not specifically disclose a reflexive control system wherein the master scanner is a field bus coupler. Edwards teaches the use of a field bus and a field bus coupler in an industrial control system [col. 1, lines 9-22, "A fieldbus is a specific...Fieldbus network."; field bus coupler is inherent for coupling with the field bus]. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth by using a field bus coupler as the master scanner in order to employ a CAN network which has the advantages of an easily configurable system and detection and correction of transmission errors caused by electromagnetic interference, as taught by Edwards [col. 2, lines 17-22, "The CAN protocol...centralized diagnostics."]

37. As for claim 32, Dummermuth discloses the method of claim 31 wherein initializing the control system comprises the steps of configuring a reflex function of the output module [col. 2, lines 29-38, "The logic circuit...the central processor."; col. 4, lines 16-19, "The processor module...in the art."]. Dummermuth does not specifically disclose assigning an address identifier to the input and output modules. Edwards teaches assigning an address identifier to all devices connected to network [col. 1, lines 41-60, "Fieldbus networks...the monitor's presence."]. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth by assigning an address identifier to the input and output modules during initialization in order to employ a CAN network which has the advantages of an easily configurable system and detection and correction of transmission errors caused by

Art Unit: 2121

electromagnetic interference, as taught by Edwards [col. 2, lines 17-22, "The CAN protocol...centralized diagnostics."].

38. As for claim 33, Dummermuth teaches configuring the reflex function with a central processor [col. 2, lines 29-38, "The logic circuit...the central processor."; col. 4, lines 16-19, "The processor module...in the art."]. Dummermuth does not specifically disclose that a PC may comprise the central processor [12, Fig. 2]. Edwards teaches that a PC may comprise the central processor [Fig. 9]. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth by using a PC as the central processor because a PC provides an affordable platform and user interface with sufficient processing power for most control systems.


Conclusion

39. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,301,509, note personal computer 6, Fig. 1; US 5,519,636, note Fig. 1; US 5,909,368, note decentralized control strategy with smart field devices; US 5,960,214, note smart field devices; US 6,434,432, note teaches CANopen protocol; US 5,530,643, note distributed control system; US 5,157,595, note Fig. 3; US 5,988,847, note Fig. 2; US 6,574,681, note Fig. 2.
40. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron C Perez-Daple whose telephone number is (703)305-4897. The examiner can normally be reached on 8am-5pm.

Art Unit: 2121

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on (703)305-0282. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

 10/30/03

Aaron Perez-Daple



ANIL KHATRI
SUPERVISORY PATENT EXAMINER